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| METHODS OF SCIENTIFIC INVESTIGATION AND RESEARCH | | | |
| **Plate tectonics** | | | |
| *Standards and aspects assessed* | Below the standard | Approaching the standard | Meets the standard |
| *1.8 Identify, and make critical use of, secondary information* | Does not use index, unable to locate information by leafing through book  **or** unsure od significance of located information | Uses index to locate information…  … from relevant pages 34 – 39  **Or** locates information by leafing through book  **And** Information provided may be unfiltered (i.e. includes irrelevant information) | Uses index to locate information…  … from relevant pages 34 – 39  **And** Selects only relevant information necessary tp answer the question. |
| *2.1 Understand the historical developments of the major scientific ideas* | Only one idea related to plate tectonics, **or** some mention of the scientists involved without link to evidence for the theory | At least two pieces of evidence for plate tectonics mentioned | Main evidence (major points highlighted):   * **That continents fit together** * Wandering poles – fossil magnetism * **Distribution of present day plants and animals** * **Ocean crust is younger than continental crust** * Seafloor spreading can be measured * **Major fault lines indicate plate boundaries (earthquake & volcano zones)** * **Mechanism involves rising currents of magma which cause seafloor spreading**   **Sufficiency:** Minimum of 3 out of 5 points  **And** mention of the chronology of developments in the theory |

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| METHODS OF SCIENTIFIC INVESTIGATION AND RESEARCH | | | |
| **ID Limestone** | | | |
| *Standards and aspects assessed* | Below the standard | Approaching the standard | Meets the standard |
| *1.2 Make predictions directly related to a research question* | Inappropriate or no test is described **and** no mention of expected positive result | The appropriate test is chosen, but student neglects to state that a in positive test gas is evolved.  **Or** a positive result is described and the description of the test is omitted and must be inferred by the reader. | The test involves adding acid to the sample **and** watching for bubbles/fizzing if the sample contains carbonate. |
| *3.1 Record raw data appropriately in a manner that allows easy interpretation* | Incorrect or insufficient information in observations column |  | **Observations** column:  A = no fizzing/bubbles/gas  B = no fizzing/bubbles/gas  C = fizzing/bubbles/gas  D = fizzing/bubbles/gas |
| *3.3 Draw valid conclusions, allowing for errors and uncertainties* | Either C **or** D not correctly identified as limestone. | If samples A & B had been contaminated with carbonate powder they might fizz with acid. C & D must be correctly identified. | **Conclusion** column:  A= no/not limestone  B= no/not limestone  C= yes/limestone  D= yes/limestone |
| *4.1 Select and use correctly and competently the appropriate equipment and materials for an investigation, with due regard for the safety of self and others* | *One* of the questions [Question (describe how you will use…equipment…):  **And**  question (describe how you ensured …safety…)] is answered inadequately, or no attempt to answer the questions.  **Or** students behaved in a hazardous way | Question (describe how you will use…equipment…):  **or**  question (describe how you ensured …safety…) is answered  **or** both questions are answered, but inadequately (information is lacking or superfluous)  **or** students were *seen to be* conductinf the experiment correctly, with regard for safety. | Question (describe how you will use…equipment…)is answered to show evidence that only materials required for adding acid to the sample were used.  **And**  question (describe how you ensured …safety…) is answered to show how spillage of acid was minimised by either containment, washing, or wiping of samples, **and** use of safety glasses by the participants. |

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| METHODS OF SCIENTIFIC INVESTIGATION AND RESEARCH | | | |
| **Igneous rocks** | | | |
| *Standards and aspects assessed* | Below the standard | Approaching the standard | Meets the standard |
| *3.1 Record raw data appropriately in a manner that allows easy interpretation* | Omits recording *any* information on one or more of the rock samples. | Some information recorded for each rock type, but some important information is omitted  e.g. references to colour but not crystal size | Statements refer to a description of the colour **and** crystal size:  2 = pale, mostly pink, small amount of black, large crystals  3 = more light than dark minerals, no pink, large crystals  7 = mostly dark minerals, large crystals  9 = very pale coloured rock, no visible crystals |
| *3.2 Process raw data by the most appropriate means* | Student unable to use classification chart. | Classification chart is used with *partial* success – i.e… Discussion with student *able to resolve issues* with using the classification chart. | Igneous rock classification chart is used successfully – i.e. the samples are classified as: |
| *3.3 Draw valid conclusions, allowing for errors and uncertainties* | One sample only identified correctly. | Two or three of the four samples correctly identified. | 2 = granite  3 = granodiorite or diorite  7 = basalt or peridotite  9 = rhyolite |

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| METHODS OF SCIENTIFIC INVESTIGATION AND RESEARCH | | | |
| **Fossils** | | | |
| *Standards and aspects assessed* | Below the standard | Approaching the standard | Meets the standard |
| *1.4 Work constructively and adaptively with others as a team on a scientific investigation* | Worked individually |  | Worked cooperatively with one other student to locate information and exchange opinions. |
| *1.8 Identify, and make critical use of, secondary information* | Information provided on the worksheet is **less than** that provided on *model answers for approaching the standard.* | Made use of the supplied text and reference sheets to *complete* the worksheet :  For minimum information required, refer to model answers. | Made use of the supplied text and reference sheets to *complete* the worksheet :  For minimum information required, refer to model answers. |
| *4.2 Follow instructions accurately but be able to adapt to unforeseen circumstances* | Has **not** provided any **plausible** answer to **questions 1, 4 or 8.** | As for 1.8, and has provided a *plausible answer* to **one of** questions **1, 4 and 8** and **attempted at least one** of the **other** two questions. | As for 1.8, and has provided a *plausible answer* and reason to **Questions 1,4 and 8**(answers not explicit in text). |

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| METHODS OF SCIENTIFIC INVESTIGATION AND RESEARCH | | | |
| **Construction rock** | | | |
| *Standards and aspects assessed* | Below the standard | Approaching the standard | Meets the standard |
| *1.2 Make predictions directly related to a research question* | One application is realistic | Two of three applications are realistic | All applications of each rock type are realistic, eg:  schist = wall construction  slate = roofing  marble = statues, interior, facings |
| *1.8 Identify, and make critical use of, secondary information* | Attempt to say something about the properties of **one** rock sample only. Information may be false or irrelevant | Information is used to make at least one true statement about **two** of the three rock samples. | The rock samples are examined and…  Information on reverse of sheet is used to make at least one **true statement about** the properties of **schist.**  Information in the text is used to locate and record at least one **true statement about** the properties of **marble and slate**  (refer to model answers) |
| *3.4 Use an appropriate range of methods to communicate scientific information* | Information communicated is irrelevant or unscientific. | Clear descriptive language **or** drawings used to show how layered nature of slate **or** schist makes each of these rock types fit for the purpose outlined in 1.8. | Clear descriptive language **or** drawings used to show how layered nature of slate **and** schist makes each of these rock types fit for the purpose outlined in 1.8. |

**Note:** Information in the third column in the worksheet – ‘other factors’ is not assessed. The quality of answer here may reflect depth of thinking or student prior knowledge. It may provide data for a further category: ‘Exceeds the standard’